

**SELF ALIGNED METHOD OF FORMING A SEMICONDUCTOR MEMORY ARRAY
OF FLOATING GATE MEMORY CELLS WITH HORIZONTALLY ORIENTED
EDGES, AND A MEMORY ARRAY MADE THEREBY**

This application is a divisional of the U.S. application No. 10/183,834, filed on 6/25/2002, which is now U.S. Patent No. 6,756,633.

This application claims the benefit of U.S. Provisional Application No. 60/343,634, filed December 27, 2001, and entitled A Super Self-Aligned Flash E2PROM With Vertical Word-Line Transistor For Program and Horizontal-Oriented Floating-Gate Tips For Erase, and of U.S. Provisional Application No. 60/355,363, filed February 6, 2002, and entitled A Super Self-Aligned Flash E2PROM With Vertical Word-Line Transistor For Program and Horizontal-Oriented Floating-Gate Tips For Erase - SAC Option and Metal Source-Line Option.

TECHNICAL FIELD

The present invention relates to a self-aligned method of forming a semiconductor memory array of floating gate memory cells. The present invention also relates to a semiconductor memory array of floating gate memory cells of the foregoing type.

BACKGROUND OF THE INVENTION

Non-volatile semiconductor memory cells using a floating gate to store charges thereon and memory arrays of such non-volatile memory cells formed in a semiconductor substrate are well known in the art. Typically, such floating gate memory cells have been of the split gate type, or stacked gate type.

One of the problems facing the manufacturability of semiconductor floating gate memory cell arrays has been the alignment of the various components such as source, drain, control gate, and floating gate. As the design rule of integration of semiconductor processing decreases, reducing the smallest lithographic feature, the need for precise alignment becomes more critical. Alignment of various parts also determines the yield of the manufacturing of the semiconductor products.

Self-alignment is well known in the art. Self-alignment refers to the act of processing one or more steps involving one or more materials such that the features are automatically aligned with respect to one another in that step processing. Accordingly, the present invention